

AMENDMENTS TO THE CLAIMS

Claims

We claim:

1. Method for reprocessing used plastic containers, ~~especially including~~ PET bottles, comprising the steps:
 - a) analyzing (102, 202); the degree of contamination of the plastic,
 - b) determining (106, 221, 223) decontamination process parameters as a function of the degree of contamination found in the analyzing step a), and
 - c) conducting controlled decontamination (112) of the plastic according to the decontamination process parameters thus determined.
2. Method according to Claim 1, ~~characterized in that~~ wherein in the analyzing step a), contaminants present in the plastic and their respective concentrations are determined.
3. Method according to Claim 2, ~~characterized in that~~ wherein the contaminants detected are combined into contaminant groups.
4. Method according to ~~one of Claims~~ Claim 1 through 3, ~~characterized in that~~, wherein in step b) a process temperature adapted to the degree of contamination is determined as a decontamination process parameter.
5. Method according to ~~any one of Claims~~ Claim 1 through 4, ~~characterized in that~~, wherein in step b) a process time that is adapted to the degree of contamination is determined as a decontamination process parameter.
6. Method according to ~~any one of Claims~~ Claim 2 through 5, ~~characterized in that~~, wherein in step b) the degree of contamination of the plastic is determined by adding up the concentrations of one of the contaminants or the contaminant groups detected.
7. Method according to Claim 6, ~~characterized in that~~ wherein the individual contaminants or contaminant groups are assigned a weighting factor as a function of an intensity of contamination corresponding to that contaminant or contaminant group, and the

degree of contamination is obtained from the weighted sum of the concentrations of the contaminants or contaminant groups detected.

8. Method according to ~~any one of Claims~~ Claim 2 through 5, characterized in ~~that, wherein~~ in step b) the decontamination process parameters are determined as a function of the concentrations of a predetermined number of contaminants or contaminant groups.

9. Method according to ~~any one of Claims~~ Claim 2 through 5, characterized in ~~that, wherein~~ in step b), the decontamination process parameters are determined independently of one another for at least two, ~~especially all of~~ the contaminants or contaminant groups detected, and in step c) the decontamination process parameters for which the profile of decontamination requirements is highest are used.

10. Method according to ~~any one of Claims~~ Claim 1 through 9, characterized in ~~that, wherein~~ in step b) the decontamination process parameters are determined as a function of regulable threshold values (SW1, SW2).

11. Method according to ~~any one of Claims 1 through~~ Claim 10, characterized in ~~that wherein~~ step c) is performed only when the degree of contamination exceeds a predetermined first threshold value (SW1).

12. Method according to ~~any one of Claims 1 through 11, characterized in that~~ Claim 10, wherein the plastic is re-shredded (111) between steps b) and c) if the degree of contamination exceeds a predetermined second threshold value (SW2).

13. Method according to ~~any one of Claims 1 through 12, characterized in that~~ Claim 10, wherein instead of steps b) and c), the plastic is sorted out and removed (105) when the degree of contamination exceeds a predetermined third threshold value (SW3).

14. Method according to ~~any one of Claims~~ Claim 1 through 13, characterized in ~~that, wherein~~ in step b) the decontamination process parameters are determined (107) with the help of a numerical model and the degree of contamination is a parameter of the model.

15. Method according to ~~any one of Claims~~ Claim 1 through 13, characterized in ~~that, wherein~~ in step b) the decontamination process parameters are determined by comparing the degree of contamination with a predetermined data record.

16. Method according to ~~any one of Claims Claim 1 through 15~~, characterized in that, wherein between steps a) and b), the plastic is added to one of at least two partial quantities as a function of the degree of contamination, and in step b), decontamination process parameters are determined (221, 223) for each of the at least two partial quantities, and in step c), the decontamination is performed (222, 224) for each of the partial quantities according to the decontamination process parameters thus determined.

17. Method according to ~~any one of Claims Claim 1 through 16~~, characterized in that, wherein the degree of contamination of the decontaminated plastic is determined and the value thus determined is optionally used to adjust the decontamination process parameters.

18. Device for ~~performing the method according to any one of Claims 1 through 17~~, reprocessing used plastic containers comprising:

- a system (305) for analyzing the degree of contamination of the plastic,
- a system (306) for determining decontamination process parameters as a function of the degree of contamination thus detected, and
- a system (307) for controlled decontamination of the plastic according to the decontamination process parameters thus determined.

19. Device according to Claim 18, ~~characterized in that~~ wherein the system (305) for performing the analysis comprises a mass spectrometer.

20. Device according to Claim 19, ~~characterized in that~~ wherein the mass spectrometer is configured so that the degree of contamination is determined essentially in real time.

21. (New) Method according to Claim 9, wherein the decontamination process parameters are determined independently of one another for all of the contaminant or contaminant groups detected.